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WHAT IS CLAIMED IS:

1. An apparatus for removing clots from the vasculature of a patient, comprising

an elongated catheter member; and

at least one clot retrieval member connected to said elongated catheter member, said at least one clot retrieval member being movable between an initial compressed configuration to an expanded configuration extending outwardly from the elongated catheter member to trap and hold clots within the vessel, the elongated catheter member being adapted to be placed within a vessel of the patient when the at least one clot retrieval members is in the compressed configuration and removed from the vessel when the clot retrieval member is in the expanded configuration, whereby clots trapped by the tab members can be withdrawn from the vessel.

2. The apparatus of Claim 1, wherein said elongated catheter member is tubular, said elongated catheter member having tubular wall and an exterior surface, and said at least one clot retrieval member comprising a plurality of ridges and valleys defined in said tubular wall, said plurality of ridges and valleys being movable between an initial compressed configuration in which said ridges and valleys are substantially contiguous with the external surface of the elongated catheter member, and an expanded configuration wherein said ridges extend outwardly from the elongated catheter member to trap and hold clots within the vessel, the elongated catheter member being adapted to be placed within a vessel of the patient when the plurality of ridges and valleys are in the compressed configuration and removed from the vessel when the ridges and valleys are in the expanded configuration, whereby clots trapped by the ridges and valleys can be withdrawn from the vessel.

3. The apparatus of Claim 2, wherein said plurality of ridges and valleys are compressed axially and radially in said compressed configuration.

4. The apparatus of Claim 2, wherein said elongated catheter member and said ridges and valleys are formed from a shape memory material.

5. The apparatus of Claim 4, wherein said shape memory material having a glass transition temperature (T_g) above body temperature.

6. The apparatus of Claim 4, wherein said shape memory material has a desired compressed configuration at a temperature appropriate for introduction into the body via a catheter, and after heat activation after placement in the body, will take on expanded configuration for trapping and holding clots.

7. The apparatus of Claim 4, wherein said shape memory material is selected from the group consisting of polyurethane, polyethylene, polyethylene terephthalate, and high density polyethylene.

8. The apparatus of Claim 4, wherein said shape memory material comprises a nickel titanium alloy that can be heat treated to have shape memory behavior.

9. The apparatus of Claim 1, wherein said at least one clot retrieval member comprises a plurality of tab members connected to said elongated catheter member, said plurality of tab members being movable between an initial compressed configuration and an expanded configuration extending outwardly from the elongated catheter member to trap and hold clots within the vessel, the elongated catheter member being adapted to be placed within a vessel of the patient when the tab members are in said compressed configuration and removed from the vessel when the tab members are in said expanded configuration, whereby clots trapped by the tab members can be withdrawn from the vessel.

10. The apparatus of Claim 9, wherein said elongated catheter member comprises an elongated, tubular member with a tubular wall having a surface defining said plurality of tab members.

11. The apparatus of Claim 10, wherein said tab members are initially compressed axially to extend substantially contiguously with the surface of the tubular wall.

12. The apparatus of Claim 9, wherein said tab members are formed from a shape memory material.

13. The apparatus of Claim 1, wherein said at least one clot retrieval member comprises an annular ring connected to the elongated catheter member, with the annular ring having an initial compressed configuration in which the annular ring is compressed radially against the surface of the elongated catheter member and an expanded configuration in which the annular ring projects outwardly from the surface of the elongated catheter member, whereby the extended annular ring can trap and hold a blood clot.

14. The apparatus of Claim 13, wherein said annular ring is formed from a shape memory material.

15. The apparatus of Claim 14, wherein said shape memory material has a glass transition temperature (T_g) above body temperature.

16. The apparatus of Claim 14, wherein said shape memory material has a desired compressed configuration at a temperature appropriate for introduction into the body via a catheter, and upon heat activation, will take on an expanded configuration for trapping and holding clots.

17. The apparatus of Claim 14, wherein said shape memory material is selected from the group consisting of polyurethane, polyethylene, polyethylene terephthalate, and high density polyethylene.

18. The apparatus of Claim 14, wherein said shape memory material comprises a nickel titanium alloy that can be heat treated to have shape memory behavior.

19. The apparatus of Claim 1, wherein said at least one clot retrieval member comprises a plurality of tab members, with each of the tab members being connected at one end to the elongated catheter member and having a free end, with the tab members having an initial compressed configuration in which the tab members are compressed radially against the surface of the elongated catheter member and an expanded configuration in which the tab members project outward radially from the surface of the elongated catheter member, whereby the extended tab members can trap and hold a blood clot.

20. The apparatus of Claim 19, wherein said plurality of tab members are formed from a shape memory material.

21. The apparatus of Claim 20, wherein said shape memory material has a glass transition temperature (T_g) above body temperature.

22. The apparatus of Claim 20, wherein said shape memory material has a desired compressed configuration at a temperature appropriate for introduction into the body via a catheter, and can be activated by heat to take on an expanded configuration for trapping and holding clots.

23. The apparatus of Claim 20, wherein said shape memory material

is selected from the group consisting of polyurethane, polyethylene, polyethylene terephthalate, and high density polyethylene.

24. The apparatus of Claim 20, wherein said shape memory material comprises a nickel titanium alloy that can be heat treated to have shape memory behavior.

25. The apparatus of Claim 1, wherein said at least one clot retrieval member comprises an elongated sheet of shape memory material having first and second ends connected to the elongated catheter member, said elongated sheet of shape memory material being wound in a helical configuration about the elongated catheter member, and the elongated sheet of shape memory material having an initial compressed configuration in which the elongated sheet of shape memory material is compressed radially against the surface of the elongated catheter member and an expanded configuration in which the elongated sheet of shape memory material projects outward radially from the surface of the elongated catheter member, whereby the extended elongated sheet of shape memory material can trap and hold a blood clot.

26. The apparatus of Claim 25, wherein said shape memory material has a glass transition temperature (T_g) above body temperature.

27. The apparatus of Claim 25, wherein said shape memory material has a desired compressed configuration at a temperature appropriate for introduction into the body via a catheter, and can be activated by heat to take on an expanded configuration for trapping and holding clots.

28. The apparatus of Claim 25, wherein said shape memory material is selected from the group consisting of polyurethane, polyethylene, polyethylene terephthalate, and high density polyethylene.

29. The apparatus of Claim 25, wherein said shape memory material comprises a nickel titanium alloy that can be heat treated to have shape memory behavior.

30. The apparatus of Claim 1, further comprising a heat activation member that can be advanced axially through said elongated catheter member and said at least one clot retrieval member for heating said at least one clot retrieval member to cause said at least one clot retrieval member to move from said first compressed configuration to said second expanded configuration.

31. The apparatus of Claim 30, wherein said heat activation member comprises a fiber optic member.

32. The apparatus of Claim 30, wherein said heat activation member comprises a heat pipe.

33. The apparatus of Claim 30, wherein said heat activation member comprises a device for generating heat by RF energy.